Post-assessment—Rational Functions Name: _____Period: ____

NO CALCULATORS!!!!

TRUE OR FALSE:

_____1. A graph can never cross a vertical asymptote. However, a graph CAN cross a horizontal asymptote, but at the center of the graph only.

Simplify the rational expressions. CIRCLE YOUR ANSWER!

2. $\frac{x^2-4x-5}{x^2-3x+2} \bullet \frac{x^2-4}{x^2-3x-10} =$

3. $\frac{x^2+5x+6}{x^2-x-20} \bullet \frac{x-5}{x^2+x-2} =$

4. $\frac{x^2-9}{x^2-4x+4} \div \frac{x^2-x-6}{x^2-4}$

5. $\frac{x^2-4}{2x+5} \div \frac{x-2}{2x^2-x-15} =$

6. $\frac{\frac{x-3}{x^2+17x-1}}{\frac{x-3}{x-1}} =$

7. $\frac{3}{x-1} - \frac{2}{x+1} =$

Simplify the rational expressions. CIRCLE YOUR ANSWER!

8. $\frac{x}{x-2}+\frac{-8}{x^2-4}=$

9. $\frac{x}{x^2+14x+49}-\frac{2}{x^2-49}=$

Find the domain of the rational functions:

10. $f(x)=\frac{x+2}{x+3}$

Domain=

11. $g(x)=\frac{(x+3)(x-1)}{x(x-5)}$

Domain=

Find the location of the vertical asymptotes and holes in the rational functions:

12. $f(x)=\frac{x^2-4x-5}{x^2+4x+3}$

vertical asymptote(s) at _____

hole(s) at _____

13. $h(x)=\frac{(x^2-4)(x+1)}{(x+2)(x^2-4x-5)}$

vertical asymptote(s) at _____

hole(s) at _____

Find the location of the horizontal asymptote of the rational functions:

14. $g(x)=\frac{5x+4}{x-3}$

horizontal asymptote at _____

15. $f(x)=\frac{2x+1}{x^2-3}$

horizontal asymptote at _____

Write the letter next to the word that fits the definition:

16. Rational function:_____
17. Horizontal asymptote:_____
18. Domain of a function:_____
19. Vertical asymptote:_____
20. Range of a function:_____
21. Polynomial:_____

a. A monomial or sum of monomials
b. Any function that has a radical in it
c. Is found by checking the degree of the numerator and the denominator
d. The y-values of a function
e. A many-sided figure
f. A vertical line the graph approaches, but never crosses
g. The x-values of a function
h. Where chickens roam
i. A ratio of two polynomials
j. Also called an oblique asymptote

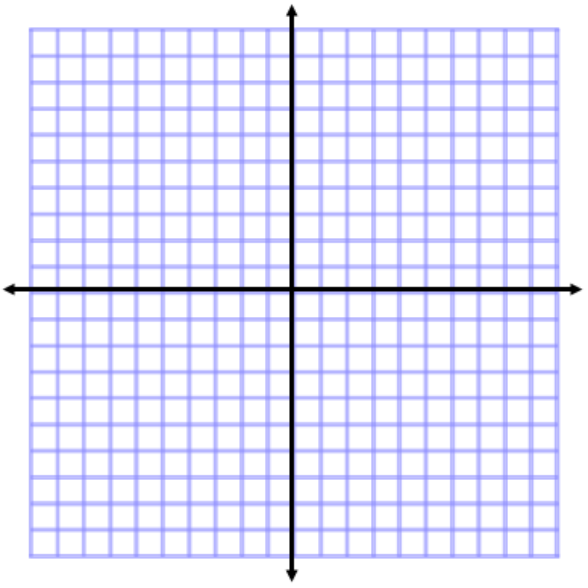
TRUE OR FALSE:

_____22. A function can have both a horizontal asymptote and a vertical asymptote.

_____23. A function can have at most one hole, one vertical asymptote, and one horizontal asymptote.

Graph the following rational functions by hand. Label all important parts.

24. $f(x)=\dfrac{x}{x+1}$ ⟶



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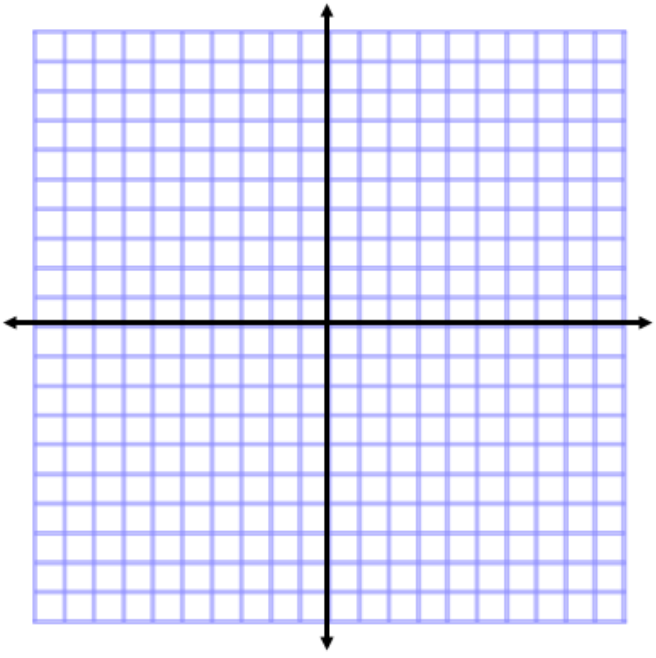

⟵ 25. $h(x)=\dfrac{(x+1)(x-2)}{(x+1)(x+3)(x-5)}$